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TECHNOLOGY DEPT.

SCIENCE NEWSLETTER

22 OCTOBER 1943
DETROIT

THE WEEKLY SUMMARY OF CURRENT SCIENCE • OCTOBER 22, 1943



Modern Weapon

See Page 255

A SCIENCE SERVICE PUBLICATION

Do You Know?

Meteorites reaching the earth contain no new or unknown elements.

Sapphire and ruby are varieties of the mineral corundum which is aluminum oxide; they differ only in color.

Victory gardeners with surplus *potatoes* may store them safely after drying in a ventilated, cool, dark place, where they will not freeze.

Navy *blimps*, on the lookout for enemy submarines in northwestern waters, report by radio to fishing boats any schools of fish sighted.

The members of the armed forces are consuming some 40,000 gallons of *oysters* a week, a gallon holding from 150 to 450 eastern oysters.

Increasing consumption of fluid *milk* is threatening the supply of butter, cheese and evaporated milk; the production of these has already declined and may be 20% less this year than last.

Number one use for *beeswax* before the war was in cosmetics—lipsticks, cold creams, rouge and deodorants; now its number one use is for waterproofing and protective coatings for shells, belts, coils and machinery.

Ammonium nitrate is a satisfactory nitrogen *fertilizer* if granulated and the granules given a new coating treatment to prevent moisture absorption; the coating is a film made up of a wax-like material and a fine clay.

SCIENCE NEWS LETTER

Vol. 44 OCTOBER 16, 1943 No. 16

The weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N. W., Washington 6, D. C. NOrth 2255. Edited by WATSON DAVIS.

Subscriptions—\$5.00 a year; two years, \$8.00; 15 cents a copy. Back numbers more than six months old, if still available 25 cents.

In requesting change of address, please give your old address as well as the new one, at least two weeks before change is to become effective.

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Cable address: Sciserv, Washington. New York office: 310 Fifth Avenue, CHIckering 4-4565.

Entered as second class matter at the post office at Washington, D. C., under the Act of

Question Box

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Most articles which appear in SCIENCE NEWS LETTER are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.

Dinner plates made of slabs of *salt* are reported in use in China; they season the food served on them.

Brazil, called one of the leading arsenals of raw materials for war industries, shipped over 700,000 tons of strategic materials to the United States in the year ended in April.

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Most articles which appear in SCIENCE NEWS LETTER are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.

While *frogs* are hibernating, no air is taken into the lungs; breathing occurs through the skin.

Because of the rarefied *atmosphere* in places like Quito, Ecuador, baseball batters knock out many homers; also pitchers cannot throw curves; Quito is 9,500 feet above sea level.

March 3, 1879. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to Periodical Literature, Abridged Guide, and in the Engineering Index.

The Science Observer, established by the American Institute of the City of New York, is now included in the SCIENCE NEWS LETTER.

The New York Museum of Science and Industry has elected SCIENCE NEWS LETTER as its official publication to be received by its members.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 393 7th Ave., N.Y.C., PENNSYLVANIA 6-5566; and 360 N. Michigan Ave., Chicago, STate 4439.

SCIENCE SERVICE is the institution for the Popularization of Science organized 1921 as a non-profit corporation.

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MEDICINE

Trench Mouth Remedy

Sulfathiazole tablets dissolved on the tongue cause throat soreness and other symptoms to disappear in just three days.

► SULFATHIAZOLE "may be a specific cure" for trench mouth and the sore throat that often goes with it, Major C. S. Linton, M. C., A.U.S., suggests. (*Journal, American Medical Association*, Oct. 9)

Definite improvement in the soreness of the throat within the first 24 hours and practically complete cure within three days followed the use of this drug in the first four cases, Major Linton reports. With other methods of treatment, whether the infection is in the gums or the throat, an apparent cure in 10 days is considered satisfactory and even then there may be a recurrence.

The condition has been seen recently in several soldiers returning from the South

Seas. Because cases of this type are likely to increase under war conditions, Major Linton states he believed it advisable "to make this preliminary report showing remarkable recovery under treatment with sulfathiazole."

Only one case in which a sulfa drug was used for this condition has previously been reported, so far as Major Linton could find. Treatment in this case resulted in a "remarkable cure," but another authority writing on the sulfa drugs, Major Linton found, states they had been used in such gum infections as pyorrhea and trench mouth without benefit.

In Major Linton's cases, the patients were given sulfathiazole tablets to dis-

solve on the tongue every two hours during the day and every four hours during the night. The tablets for use at night were twice as strong as the daytime ones. After two days the patients stopped using the tablets, unless directed to continue because the symptoms had disappeared.

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ASTRONOMY

Our Galaxy Composed of Imperfectly Mixed Systems

► TWO SYSTEMS of stars in various stages of development have mixed in an irregular manner to form our galaxy, according to Dr. A. N. Vyssotsky and Dr. Emma T. R. Williams of the Leander McCormick Observatory. Stars of the main sequence, which constitute the great majority of our stellar universe, conform to one code of motion and distribution, whereas the more massive giant stars follow a very different code of their own.

The apparent galactic concentrations of main-sequence stars can be predicted from those of A-type stars by assuming that there is the same sort of equipartition of energy among these stars as is found among the molecules of our air, Drs. Vyssotsky and Williams report in the *Astrophysical Journal* (September). The giant stars, on the other hand, do not follow the same pattern.

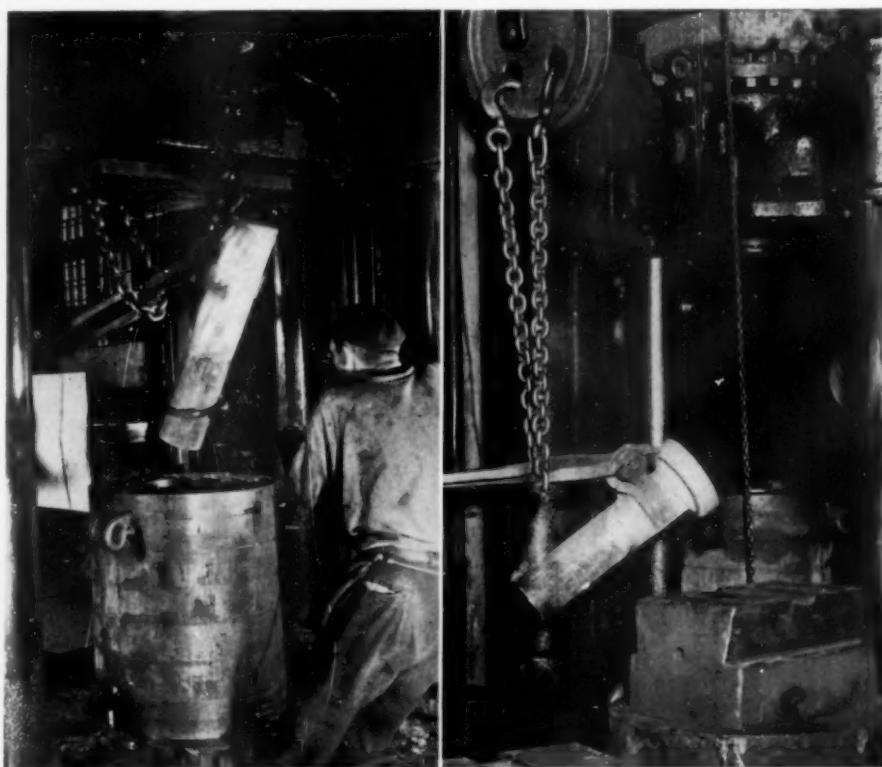
Among the stars of the main sequence, the University of Virginia astronomers find the mean kinetic energy of the red dwarfs to be about the same as that of the much more massive A-type stars. From this they assume that all types of stars of the main sequence have, on the average, the same kinetic energy.

Just as in an atmosphere of uniform temperature the heavy molecules tend to remain at lower levels than the light molecules, so among the main-sequence stars the massive stars concentrate more toward the central plane of the Milky Way than the lighter stars.

The much greater kinetic energies of the giant stars, they point out, agree very well with the relatively small concentration of the giants towards the plane of the Milky Way.

The imperfect way in which the two systems of stars are mixed is seen in the fact that in some parts of the Milky Way there are clouds of main-sequence stars and relatively few giants, whereas in other parts of our galaxy the giants appear to be more frequent.

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NEW METHOD—Shafts for generators for Navy ships can now be squeezed out in a die by a 1,000-ton press almost as quickly as a baker cuts out cookies instead of being shaped with laborious pounding with a steam hammer. The die is the idea of Joseph K. Miller, shop foreman in the East Pittsburgh plant of Westinghouse Electric & Manufacturing Company, who received a prize for his victory-speeding suggestion. At the left, a red hot steel bar is being dropped into the die. At the right, it is being removed after shaping.

MEDICINE

Valley Fever Epidemic

Warning issued to medical officers regarding relatively uncommon but important disease after outbreak among troops on maneuvers.

► AN EPIDEMIC of 75 cases of Valley Fever among troops on maneuvers, with a loss to the military service of about 5,500 man-days, is reported by Major David M. Goldstein and Captain Stanley Louie, M.C., A.U.S., in *War Medicine*. (September)

They warn that medical officers both in this country and abroad should be on the alert for this relatively uncommon but important disease and should be given every opportunity to investigate areas selected for maneuvers with extreme care before approval.

Valley Fever and San Joaquin Fever are popular names for the condition which Major Goldstein and Captain Louie report under the technical name of primary pulmonary coccidioidomycosis. It is caused by inhaling the fungus *Coccidioides immitis*. This fungus can exist only under certain climatic conditions which, so far as is known, occur in this country only in parts of California, Tex-

as and Arizona. It may exist elsewhere and not yet have been recognized, or may go under some other local name, which is one reason for warning medical officers generally to be on the lookout for it.

The other reason is that, although the chances of recovery are excellent, the disease is a protracted illness. The 5,500 man-days lost in the epidemic reported represent an average length of illness for each of the 75 men of well over two months.

Pain in the chest, chills, fever and cough are the usual symptoms at the beginning of an attack. The disease may be mistaken for pleuritis, bronchitis and various other lung diseases. The fungus may also invade the body through cuts of the skin, in which case it causes a skin disease. A highly fatal form of the infection, coccidioidal granuloma, occasionally follows the benign lung infection.

Science News Letter, October 16, 1943

PHARMACY

Atabrine Tested

Persistent rumor that American product causes more nausea, vomiting and diarrhea than the German-made drug is proved to be unfounded.

► AMERICAN-MADE atabrine, the synthetic drug used in prophylaxis and treatment of malaria, is no more dangerous than the German drug, Dr. Elmer H. Loughlin, Dr. Richard H. Bennett, Dr. Edward Santora and Dr. Silvio Mazzucci, of Long Island College of Medicine and Riker's Island Hospital, N. Y., report in the military medical journal, *War Medicine* (September), published by the American Medical Association and the National Research Council.

Atabrine was originally made in Germany, but since the beginning of the present war most of the atabrine used in non-Axis-dominated countries has been manufactured in the United States from basic American materials.

A rumor has persisted that this American product caused more symptoms of

poisoning, chiefly nausea, vomiting and diarrhea, than the German drug. The rumor, according to the New York scientists, started from results of preliminary, unpublished investigations claiming that the American drug caused these symptoms in a considerable number of persons getting it as prophylaxis against malaria.

The New York scientists investigated the matter by studying the effects of the two drugs on two different groups of people. One group consisted of 85 tuberculosis patients at the Brooklyn Thoracic Hospital who would be expected to show adverse effects if anyone did. The other consisted of 64 volunteers at Riker's Island Penitentiary, healthy prisoners actively at work. Neither the doctors giving the medicines nor the persons getting them knew when American-made atab-

rine, German atabrine or colored sugar and starch pills looking like the atabrine tablets were being used.

No appreciable difference was found in the clinical toxicity of atabrine made by American processes of manufacture from basic American materials and atabrine made from German basic material by either American or German processes. A certain number of both healthy prisoners and tuberculous patients had nausea, vomiting and diarrhea while getting the drugs. The amount of indisposition was about 2% of man-days, regardless of which drug was given. The healthy subjects were able to carry on their assigned work while getting the drug.

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MILITARY SCIENCE

Tanks Need Thicker Hulls If They Are To Survive

► SLOWER but tougher tanks with thick armor plates that have been cast and welded will probably be the future trend if the lumbering giants are to retain their place in modern warfare. This development was forecast by L. E. Carr, technical director of the British Ministry of Supply Mission, Washington, D. C., in a report to the American Society of Mechanical Engineers and the Engineering Institute of Canada, meeting in Toronto.

"If the tank is to survive as a weapon of war," he said, "there is no doubt whatever that such survival will rest primarily on its ability to withstand punishment rather than high speed performance."

Mr. Carr, who has been associated with tank development for 25 years, urged that plans should be made for using castings in future tank design to assure rapid production and to facilitate design changes found necessary after battle experience.

This change would imply hand welding of the plates which has already replaced riveting in the United States; riveting is now also being eliminated in the United Kingdom. Such welding requires special skill, although simpler automatic or semi-automatic methods are now coming into use in many plants.

"The use of welding simplifies fabrication," Mr. Carr pointed out, "eliminates much machining and reduces production labor."

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There are no known poisonous lizards in the tropics.

PHYSIOLOGY-PSYCHOLOGY

New Test of Fatigue

A special tuning fork, held vibrating against the finger tips, may prove to be useful in determining when flyers need rest.

► A NEW instrument which may become a simple means of determining when a pilot is reaching a dangerous level of fatigue and needs to be grounded temporarily has been developed by Major Aaron Roth, M.C., U.S. Army.

The new instrument, called a neurometer, is a specially designed tuning fork. It is described in a report in *War Medicine* (September), military medical journal published by the American Medical Association and the National Research Council.

The tuning fork has a frequency of 128 cycles, an intensity of 70 decibels and a perception time of 35 seconds at the fingers for normal. There is a cross bar in the stem.

In using the neurometer, the examiner strikes the mid-third of the fork against the side of his own hand with enough swing and force to make the weighted ends click together. He then notes the time and transfers the vibrating fork to the patient's upturned fingers so that the cross bar rests on them. When the patient is certain he can no longer feel the vibration of the fork, the time is again noted. A normal person will stop

feeling the vibration in 35 seconds.

The vibration sense, Major Roth explains, belongs to the group of sensations which include deep pressure, position, weight, form and vibratory sensations. Although it would be a great advantage to have a means of determining quantitatively impairment in any of these deep sensations, physicians so far have had to be satisfied with determining whether such an impairment exists and whether it is mild, moderate or severe.

With the neurometer, Major Roth believes, much more exact measurements can be made. He has noticed that vibration sense at the fingers is lessened when the fingers are cold, in general fatigue and after strenuous exercising of the fingers. It is at its greatest after a refreshing sleep. It also varies with different regions of the body, being greatest at the finger tips and zero over the eyelids.

Further studies with the aid of the neurometer, Major Roth believes, will give much valuable information to neurologists and practicing physicians as well as possible aid to aviation medicine.

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BAD LANDS—But a good photograph. This print, entitled "Desert Draperies," was made by Juanita Schubert, of Minden, Nevada, and was honored by selection for exhibit in the First International Photographic Exhibit of the Field Museum of Natural History from September 15 to November 15.

The common magnifying glass has to be placed within an inch or two of the object to be magnified, he explained to the Optical Society of America. However, it is frequently necessary for surgeons and eye physicians to be some distance from the specimen they are examining, and hence they need a magnifier that will work at a distance. The new telephoto magnifier, essentially the telephoto lens used on cameras turned around backwards, enables the surgeon to use his instruments, and the eye-doctor his probing lamp, while seeing an enlarged image of his subject.

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PHYSICS

Magnets Replace Clamps

Equipment for optics experiments held in place without troublesome clamps by small but powerful magnets. Can be used in vertical position.

► INSTEAD of troublesome clamps, physicists can now use small but powerful magnets in setting up for war-important optical experiments intricate and complex arrays of lenses, lamps and diaphragms.

This new trick of the laboratory was reported to the Optical Society of America meeting in Pittsburgh by Norman F. Barnes of the General Electric Company.

Powerful Alnico magnets hold the supports for the lenses, lamps and diaphragms rigidly in place, yet any component of the optical system can be moved easily and precisely on the steel

base plate. This type of optical bench is especially adaptable to three-dimensional optical systems and can even be used in a vertical position.

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Telephoto Lens in Reverse

► TO ALLOW a surgeon to magnify the region he is probing and yet be a considerable distance away from it, Dr. Max Reiss of the Eastman Kodak Company has put into reverse the familiar telephoto lens for cameras.

New Rifle Sighting

► GREAT SAVING of time, labor and ammunition is obtained in a new method for adjusting the sights of the Garand rifle, described C. B. Sitterson, Jr., and Norman F. Barnes of the General Electric Company to the Optical Society of America.

Formerly the sights of the rifle were adjusted by trial and error, a tedious and wasteful, although very accurate, process. Sitterson and Barnes found that the last few inches of the bore of the rifle determined the trajectory of the

NAVAL SCIENCE

DE's Are Seaworthy

Article in Naval Institute Proceedings reveals that destroyer escorts are "not so little"—much larger than World War I destroyers.

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PSYCHIATRY

It Is No Disgrace To Be Somewhat Neurotic

► "IT IS GOOD to be somewhat neurotic," declares Dr. Walter C. Alvarez, of the Mayo Clinic, in his new book, *Nervous Indigestion and Pain* (Hoeber).

This should cheer up many a person who, besides his or her other sufferings, has to bear the feeling of blame or disgrace that is too often associated with the word "neurotic." Actually, the term can be taken as a compliment, Dr. Alvarez tells his patients.

"If a woman is to have any vivacity and social charm she must be nervous and highly sensitive," he declares. "Without these qualities she cannot be wide-awake and responsive and interested in people and in everything that is going on about her; without it her face will not be mobile and attractive, her eyes will not light up and her conversation will not be animated. But it is just this ability to feel keenly and to react strongly that commonly brings in its train fatigue and suffering."

The nervous make-up that can make a person feel "in the seventh heaven" while hearing a symphony, or weep at a sad play, also can make a person feel great distress or even pain after a hearty meal which would give a less nervous person a comfortable feeling of having his stomach well filled.

Although Dr. Alvarez has written this book for physicians, especially those just starting to practice medicine, there is much in it that will help the intelligent person whose nerves often make him sick and weary. One of the important points which neurotic patients may learn from the book is to recognize what they are really like. Half the battle for relief from suffering and undue fatigue may be won if the patient can stop worrying because his sensitive nerves make him feel unpleasant things and minor annoyances just as keenly as he feels the beauty of music or delight and joy in pleasant sensations.

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► DESTROYER escorts are "not so little," and they are more seaworthy than a widespread popular notion gives them credit for being, declares Lt. Ashley Halsey, Jr., U.S.N.R. (*United States Naval Institute Proceedings*, September) As a matter of fact, they are bigger than the average destroyer on fleet duty during World War I, and come within a few tons of the displacement of destroyers launched as recently as 1931-32. They are topped only by the newest destroyers, which displace from 1,500 to 2,000 tons or more.

The DE's may have got their ill name from the fact that they were designed primarily for combatting U-boats, and thus have become confused with the Eagle-boat class of World War I date. The latter craft, waspishly slim, knife-bowed and displacing only 500 tons on a length of 200 feet, were definitely sea-going bronchos. Lt. Halsey comments that it may be just as well that Eagle boats did not come into full production until after the Armistice in 1918.

The new destroyer escorts, by contrast, are more than two-and-one-half times as big as the Eagles, and a good bit beamier, displacing 1,300 tons on a length of about 300 feet. This makes them much larger than the World War I destroyers, which averaged less than 800 tons, and puts them fairly in the class with the later-built Farragut class, with its 1,375 tons.

Speed of the DE's is still a secret, though it is of course no secret that they can go fast enough to overhaul U-boats cruising at 20-knot surface speeds in relatively short order.

Details of armament also are not revealed, though the official statement has been made that the DE's can shoot it out with German and Jap subs known to mount three- and four-inch guns. Illustrations accompanying Lt. Halsey's article show the forward armament of one destroyer escort to consist of two three-inch dual-purpose guns, which were standard anti-aircraft armament even for battleships until just before the present war. These high-velocity weapons certainly could drill holes in the hull of any submarine on which they were train-

ed. In addition, there are stated to be a number of the deadly, machine-gun-like 20-millimeter Oerlikons.

Most effective weapons of the DE's, of course, are depth charges, of which these handy vessels carry "plenty." Lt. Halsey indicates that at least some of them also mount torpedo tubes.

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GEOGRAPHY

Kos, Cos or Coo in Aegean Has Important Location

► KOS, Cos, Coo or Stanko, whichever name you want to use, an important Grecian Archipelago island just now because in an active combat area, is small in size and relatively large in history—mostly ancient. It lies close to the shores of Asiatic Turkey, is populated largely by Greeks, is an Italian possession and is an important British-German combat area.

This little elongated island, about 25 miles long, is one of the Dodecanese group which includes Rhodes, Scarpanto, Lero and ten other islands, a total of 13—not 12, as is indicated by the name. They became Italian possessions in 1912 by treaty between Italy and Turkey after Italian occupation.

Kos lies about 65 miles along the Turkish coast from Rhodes. Its eastern extremity is about two miles from the mainland. It is some 25 miles farther south than Lero, where the Italians had established a naval base.

At the city of Cos on the island there is a harbor which may be used only by small boats. Outside is a roadstead suitable for anchorage of large boats. Ancient Greeks valued them as a naval outpost.

Much of the fame of ancient Kos centers about the physician, Hippocrates. It had what is claimed to be the first school of scientific medicine. It was known also as a seat of learning.

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An "animal unit" used in defining carrying capacity of grazing land is one cow or five sheep.

RESOURCES

Cork in Bottleneck

American industries using cork were embarrassed when only important cork-growing region was threatened by war. American cork will assure future supply.

By DR. FRANK THONE

► CORK FOR America's future needs is the objective of an ambitious planting project, participated in by federal and state forestry departments, numerous civic organizations and thousands of young people in school science clubs and Scout troops. A hundred thousand seedling cork-oak trees have been set out during the past three seasons, and by the end of the present autumn at least double that number will have been added.

Stimulus for this unusual program has been the embarrassing situation in which many American cork-using industries found themselves when access to the only cork-growing region that really counts at present was dangerously threatened by the war. The native home of the cork is the mountainous regions on both shores of the Western Mediterranean—Portugal and Spain on one side, Spanish and French North Africa on the other. When the Nazis overran France and achieved control of her North African holdings, that naturally took a large part of the cork crop out of our reach. Portugal and Spain remained neutral, but to get ships in and out of their ports involved running the thickest part of the submarine gauntlet.

Used for Life-belts

Lack of cork means a lot more than trouble in getting stoppers for bottles. Bottle corks, indeed, are not the most important use for cork by any means. Cork blocks are needed for life-belts and fishing net floats; corkboard for insulation in refrigerators and house walls; cork gaskets for many uses; composition cork for crown cap liners; finely ground cork for heavy-duty linoleum, and various forms of cork for a hundred other purposes. Cork is one of those versatile natural materials, like leather, that can do a lot of jobs well, and for which there is no single acceptable substitute.

The freeing of North Africa, and the bettering of the shipping situation to Mediterranean ports on the European side, have relieved the cork situation considerably. Nevertheless, our recent un-

pleasant experience has taught us a sharp lesson and it will be far better, no matter what kind of improved world the peace may usher in, not to leave ourselves in a position to be caught in the same fix again. It is somewhat along the same lines with the well-known drives to get rubber, cinchona, manila hemp and other tropical products grown in this hemisphere instead of overseas, except that in this instance there will be the further advantage of having the once-imported product grown within the boundaries of our own country, not even on the premises of a good neighbor.

Originator and sponsor of the new drive to make the United States self-sufficient in cork, at least to a large extent, is Charles E. McManus, president of the Crown Cork and Seal Company, one of the country's major cork-using concerns. The movement has become more than simply an effort to provide a home source of a needed raw material; it amounts to a kind of crusade.

The company, under Mr. McManus' impetus, has undertaken to collect cork-oak acorns from known sources, and to distribute these, or seedlings grown from them, to persons or organizations who can "give the little trees a good home."

At present, one source of the acorns used for seed is a good-sized grove of trees at Chico, Calif., set out by the University of California in 1904. However, there are also a number of smaller groups of trees in California, as well as single specimens scattered over a considerable area in the South and Southwest. Arrangements for harvesting and distributing their acorns have been made in the various states.

The promoters of the drive are anxious to locate cork-oak trees that have not yet been reported. Here is where the efforts of interested persons, and most of all young people's organizations, can do the greatest good. Boys and girls, as well as grown-ups who like hiking in the open, make the best scouts for these valuable trees.

Cork is the outer bark of an oak closely related to the native live-oak of the South and Southwest. Cultivated specimens, from acorns (*Turn to page 250*)



WANTED—Search for cork oaks, such as the one pictured here, is being pushed to develop sources in the United States. They would free the nation from dependence on former imports.

NUTRITION

Reason Why Dried Beans Are Hard to Digest Found

► THE REASON, or at least one reason, why many people find dried navy beans hard to digest has been discovered, together with a remedy, by Dr. Donald E. Bowman of the University of Indiana Medical School. (*Science*, Oct. 1)

The oil in the beans, Dr. Bowman found, slows down digestion of their starch content. Starch impregnated with butter, lard or olive oil is completely digested by the pancreatic enzyme, amylase, in half an hour. Bean oil, however, slows this digestion to 48 hours and then the digestion is not complete.

Treating the beans with yeast is the remedy Dr. Bowman suggests for overcoming the digestion difficulty.

Other beans besides dried navy beans, particularly soybeans now slated for a prominent place in the diet, may have their digestibility affected by the oil in them. Dr. Bowman is now studying the matter in further detail.

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MEDICINE

Infantile Paralysis No Bar to Motherhood

► MANY EXPECTANT mothers must have been wondering, during this year's infantile paralysis outbreak, what would happen to themselves and their babies if the disease struck them before the baby's birth.

The answer is reassuring. In most cases the mothers will have their babies in the normal way and the babies will be normal. They will rarely, if ever, be born with infantile paralysis. Fresh evidence for this appears in a report of Dr. Paul H. Harmon and Dr. Archibald Hoyne, of Sayre, Pa., and Chicago. (*Journal, American Medical Association*, Sept. 25)

Of course, some mothers have a more difficult time than others during the birth of a baby. Some babies are born with congenital defects, such as club feet. These things may happen in the case of a mother who has infantile paralysis when her child is born, or in the case of a mother who has had the disease a year or several years before she has a baby. They are not the result of the infantile paralysis, however.

In one case reported by Dr. Harmon and Dr. Hoyne, a mother stricken with infantile paralysis three months before her baby was to be born lost the baby. In this mother some of the breathing

muscles were affected by the disease. She recovered after spending some time in an iron lung, but the baby was born dead. Apparently during the period the mother was having difficulty in breathing, she did not get enough oxygen to supply her own needs and those of the unborn child and it was asphyxiated. Even when such a condition develops in the mother it may be possible in some cases to deliver the baby before it has been affected, though in this instance it was not.

This case gives further support to the view that the virus causing the disease in the mother does not pass from her body to the baby's. Even though this child was born dead, the virus could not be found in the spinal cord. Although not positive proof, the negative finding could mean that the virus did not reach the baby.

Science News Letter, October 16, 1943

NUTRITION

Food Biggest Item in Cost of Raising a Child

► FOOD is the biggest single item in the cost of raising a child, statisticians of the Metropolitan Life Insurance Company state.

For parents of moderate means, with an annual income of \$2,500 for a family of from three to six persons, the cost of feeding a child from birth to age 18 is \$2,360 for a boy, \$2,180 for a girl. The figures are based on 1935-1936 prices.

Science News Letter, October 16, 1943

MEDICINE

Influenza B Virus Larger Than Influenza A

► A DIFFERENCE in size between the particles of influenza A virus and influenza B virus has been discovered by a group of scientists, headed by Dr. Joseph W. Beard, working at Duke University School of Medicine and the Respiratory Diseases Commission Laboratory, Fort Bragg, N. C.

Influenza B virus of the Lee strain "appears to be significantly larger" than influenza A virus of the Puerto Rico strain, they report. (*Science*, Oct. 1)

Chemical studies indicate that the virus consists of lipoprotein with which is associated nucleic acid of the desoxyribose type.

Working with Dr. Beard were: D. G. Sharp, A. R. Taylor, I. W. McLean, Jr., Dorothy Beard, A. E. Feller and John H. Dingle.

Science News Letter, October 16, 1943

IN SCIENCE

ENTOMOLOGY

Food-Infesting Insects Active During Blackout

► INSECT SABOTEURS of stored food products love the blackout hours to do their evil work, observations in an English flour mill by R. F. Ewer of Richmond, England, appear to indicate. (*Nature*, July 31) He tells of counting the larvae and adults of three species of flour-eating insects that appeared on sacks of spaghetti which had been stacked up in the mill for fumigation.

Activity on the part of one of the three species rose to a peak near midnight. Another species was most active just before the end of the blackout period, about two hours before the mill began its day's grind.

Only one of the pests was a daylight operator, showing its greatest activity in the twilight period between shutting-down time and the beginning of the blackout period.

Science News Letter, October 16, 1943

CHEMISTRY

New Anti-Corrosive Protects Zinc and Cadmium

► A NEW anti-corrosive chemical material to protect zinc and cadmium surfaces will release much essential chromium for important military uses. Chromium has extensive uses in war equipment, particularly in alloy with other metals.

This low-cost protective material forms a coating so thin that it does not alter the dimensions of the parts to which it is applied. It is not injured by bending, twisting or forming, it is claimed. It has been tested by the Army and is reported to be found satisfactory for protection against salt spray and high humidity at high temperatures.

The new protective material is a product of the Rheem Research Products laboratories located in Baltimore. Zinc or cadmium surfaces to be treated are dipped in the chemical solution. Chemical action takes place. On the zinc surface a complex chromate of zinc, olive drab in color, is formed. A similar action takes place on cadmium. Drying requires less than a minute.

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THE FIELDS

MEDICINE

**Army Typhoid Vaccine
Better Now than in 1917**

► THE AMERICAN soldier today is much better protected against typhoid fever than his doughboy father was in World War I, it appears from a report by Col. George R. Callender and Maj. George F. Luippold, of the Army Medical and Sanitary Corps respectively. (*Journal, American Medical Association*, Oct. 9)

Because there has been some doubt expressed as to whether the triple typhoid vaccine given American troops would protect them against the strain of typhoid fever germs in the Middle East, special tests of this point were made. The results show that the vaccine currently used in our Army is quite as effective as that manufactured in the Middle East from the strain of typhoid germs prevalent there.

The typhoid and paratyphoid fever rates in the present Army are lower than during World War I and "for the mobilization years 1940-1942 are insignificant," even in the face of a rise in rates for diarrheal diseases which are usually accompanied by an increase in typhoid.

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NUTRITION

**Little Vitamin C
In Winter Tomatoes**

► THOSE VICTORY gardeners and housewives who put up a good store of canned tomatoes for the coming winter have more reason to congratulate themselves than they probably realized. Not only will they have tomatoes when fresh ones are scarce. The tomatoes or tomato juice in their cans will supply almost twice as much vitamin C as the fresh tomatoes one gets in market in late winter and early spring. The commercially canned tomatoes also have this extra vitamin richness.

Because tomatoes are such an important sources of vitamin C, Dr. Arthur D. Holmes, Carleton P. Jones and Dr. Walter S. Ritchie, of Massachusetts State College and Agricultural Station at Amherst, investigated the vitamin content of tomatoes bought in February, March and April. The tomatoes were bought in

small packages or by the pound, as the housewife buys them, at independent and chain grocery stores.

The average vitamin C content of these tomatoes they report (*New England Journal of Medicine*, Sept. 16) was only 8.8 milligrams per 100 grams, which is about one-third that of summer tomatoes, and slightly over half that of home and commercially canned tomatoes, which averaged 13.8 to 15 milligrams per 100 grams.

Put in another way, the person who relied on fresh tomatoes in winter for his vitamin C would have to eat from three-quarters of a pound to six and one-half pounds of tomatoes each day to get the 75 milligrams of vitamin C recommended by the National Research Council for the daily requirement of this vitamin. The cost might vary, according to where the tomatoes were bought, from 17 cents to \$2.18 with an average of 72 cents. By comparison, it was found in an earlier study that the same amount of the vitamin could be obtained from oranges purchased in late winter and early spring at an average cost of less than five cents (4.8).

Science News Letter, October 16, 1943

MEDICINE

**TB Protection May Come
From Extract of Dead Germs**

► PROTECTION against tuberculosis may come from a paraffin oil extract of dead tuberculosis germs, it appears from a report of Dr. Nine Choucroun of Cornell University Medical College. (*Science*, Oct. 8)

Dr. Choucroun's work started in Paris, was interrupted by the war in June, 1940, and resumed at Cornell in Dr. Morton Kahn's laboratories.

The results so far apply only to experimental animals and give what Dr. Choucroun terms "only an indication" of protection against tuberculosis.

The paraffin oil extract of dead tuberculosis germs contains a toxic substance capable of killing guinea pigs and also a substance which sensitizes them to tuberculin, he has found. Those animals which did not die and remained sensitized to tuberculin were able to fight off injections of living tuberculosis germs, remaining well under doses which caused non-sensitized animals to develop tuberculosis and die.

This gives the indication that the sensitizing substance may be able, if it can be separated from the toxic substance, "to protect animals against tuberculosis."

Science News Letter, October 16, 1943

STATISTICS

**Accident Death Rate
Lower in This War**

► CONTRARY to expectations, the current war has not brought about an increase in the death rate from accidents, although during the war years of 1917-1918 the accident death rate rose sharply to a very high level, the Metropolitan Life Insurance Company reports. (*Statistical Bulletin*, September)

The death rate from accidents among industrial policy holders rose from 67.3 per 100,000 in 1915 to 73.2 in 1916, a year of preparedness for war, and to 76.5 in 1917, the year we entered the war. The increase for the two years represents nearly 14%.

"Fear that history would repeat itself was strengthened," the report states, "when in 1941, also a year of active preparation, the rate rose from 46.3 in the previous year to 49.9 per 100,000, an increase of 8%. In 1942, however, the rate actually declined somewhat; moreover, it has shown little tendency to rise so far this year.

"One outstanding feature of the situation today is that even in the vastly expanded chemical and explosives industries, the largest number of lives lost in a single accident since Pearl Harbor was 54, whereas between April 1917 and November 1918 there were three accidents in explosives plants, each taking around 100 lives."

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CHEMISTRY

**Motor Vehicles of Future
May Run Without Gasoline**

► LOOKING to a day when gasoline will be a permanent rarity in the United States and probably in the whole world, Dr. Gustav Egloff and Prudence Van Arsdell of Universal Oil Products Company described, before a meeting of the American Chemical Society, progress already made in the development of motor vehicles that will run without gasoline.

These are the producer-gas units, mostly trucks and buses but including many motor cars as well, that already ply the streets and roads in oil-less lands. They convert wood chips, charcoal and a number of other solid fuels into gas, which is then fed into internal combustion engines. Dr. Egloff estimated that even now there are more than 800,000 such vehicles in operation.

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brought to this country long ago, are most likely to be found in states south of the Mason-Dixon line in the eastern half of the country, and west of the Mississippi in Arkansas, Louisiana, Texas, New Mexico, Arizona and California.

Since the cork oak is not a native tree it is not likely to be found in the woods, but more probably near human habitations, in parks and similar localities. Especially good hunting grounds are likely to be the plantings on large estates, and the half-wild stands of trees left around the ruins of old plantation houses and abandoned ranches.

It is not difficult to identify a cork oak. If you live in the South or Southwest, or are spending the winter there, you undoubtedly know what a live-oak looks like. A cork oak looks like a live-oak, except that its leaves always have toothed margins, and its acorns are usually very much longer and less bluntly pointed than those of the live-oak.

The really critical test, however, is supplied by the bark itself. Dig out a small block of the bark, if you think you have found a cork oak. If it is thick, and made of pure cork, your tree is a cork oak, and should be reported. A postcard to the Crown Cork and Seal Company, Baltimore, giving exact location, name of owner, size of tree, and abundance of acorns if any, will be a definite contribution to the national effort toward independence in one essential raw material.

The cork oaks that are now being planted will yield their first crops of cork bark in from 15 to 20 years, depending on soil, climate and other factors. After the first stripping, which usually yields bark of lower grade than that obtained in later harvests, thick shells of cork can be removed from the trunk about every 10 years for a century at least. Sometimes cork can be harvested from the lower portions of larger branches. Once a cork-oak grove is established, it becomes a long-time income-yielding part of one's estate.

Harvesting cork is a relatively simple affair, though like any job it is best done by those who have acquired some experience.

A blunt-edged, crow-bar-like tool prys the bark off in slabs. Sometimes the cork from the entire trunk can be removed in one piece.

The raw bark is put in big kettles or vats, weighted down and boiled vigorously for half an hour. This treatment re-



STRIPPING—The thick bark, valuable in many war products, is shown being stripped from a cork tree in California.

moves water soluble materials and softens the bark. Then the rough outer surface of the bark, known as "hardback"

is scraped off, after which the slabs are stacked up to dry and await marketing.

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ASTRONOMY

Molecule Identified

Comparison of spectrum of head of comet with that of oxyammonia flame and independent research both lead to identification of molecule as NH_2 .

► NITROGEN-HYDROGEN molecules made up of more than two atoms have been found to be numerous in the head of comets. Working at their respective observatories early this year, Dr. Polydore Swings of McDonald Observatory, Dr. Andrew McKellar of the Dominion Astrophysical Observatory and Dr. Rudolph Minkowski of Mount Wilson Observatory independently concluded that a molecule composed of one atom of nitrogen and two of hydrogen plays a dominant role in the composition of the head of a comet.

Conducted mainly from measurements of spectrograms of the recent bright comets, Comet Cunningham (1940c) and Comet Whipple II (1942g), this study reported in the *Astrophysical Journal* (September) was made at the three ob-

servatories. Relatively few photographs of the spectra of comets in the visual region had been made previously.

The spectrum of Comet Whipple II was compared with that of an oxyammonia flame set up in the laboratory at the Dominion Astrophysical Observatory in Victoria, British Columbia. This flame very closely resembled that of ammonia burning in an atmosphere of oxygen.

The prominent features of the two spectra matched well, and it was believed that several of the strongest features in the emission spectra of comets are due to the molecule responsible for at least part of the oxyammonia flame spectrum, this molecule probably being NH_2 , a molecule composed of one atom of nitrogen and two of hydrogen.

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For forty high school seniors every year, the Science Talent Search leads to Washington!

These are some of the 40 high school boys and girls who won Westinghouse Science Scholarships ranging from \$100 to \$2400 in the Second Annual Science Talent Search last spring.

Two hundred sixty others received honorable mention, and the majority of these have received offers of scholarships in leading colleges and universities.

If you know of some seniors who may have the ability to do creative work in science, plan to have them compete in the Third Annual Science Talent Search which is now under way.

Their teachers can arrange to give them the sci-

ence aptitude examination. They will also be required to write a 1,000 word essay on the subject "My Scientific Project," in which they will tell what they are doing or plan to do in the way of experiment or other research activity.

The Science Talent Search is sponsored by Westinghouse, conducted by Science Clubs of America.

Teachers can obtain full information from Science Service, 1719 N Street, N. W., Washington (6), D. C., or from School Service, Westinghouse Electric & Manufacturing Co., 306 Fourth Ave., P. O. Box 1017, Pittsburgh (30), Pa.

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ORNITHOLOGY

More Ducks Fly South

Estimated 150,000,000 waterfowl will migrate this season—greater number than for any year since 1910. Most go in October.

► MORE DUCKS and other migratory waterfowl are flying southward this year than any time since 1910, Dr. Ira C. Gabrielson, director of the U.S. Fish and Wildlife Service, reports.

As many as 150,000,000 ducks, geese and other waterfowl are expected to hasten southward, it is estimated. This figure is in marked contrast with the mere 27,000,000 which were believed to have participated in the annual migration seven years ago.

River ducks such as mallards, pintails and widgeons have been among the species showing the greatest increase in number. Diving ducks on the other hand, particularly the redhead, have been slow in coming back.

The annual southward migration usually begins in August with the males of some species. The largest flights, composed mostly of females and their young, occur in October after storms and cold have driven them from their summer breeding grounds.

Migrating birds do not make a bee-line flight southward. They follow certain great paths in the air known as "flyways," and once having chosen a flyway, continue to travel that particular route year after year.

One of the principal North American flyways guides the fowl down the great central valley of the Mississippi river and its tributaries. Another, roughly parallel, is over the western Great Plains, along the east foothills of the Rockies. The Atlantic and Pacific flyways, as their names indicate, lie roughly between the ocean and the nearest high mountain ranges, although subsidiary migration routes spread inland.

A number of theories have been advanced to explain the seasonal migration of the birds, one of the outstanding ones being based on the changing length of the daylight hours.

A pioneer observer of this phenomenon of the birds traveling southward when the days grow shorter and northward when they grow longer was Henry Seebohm, a widely traveled English ornithologist. Actual experiments were conducted with birds under day-lengths which were changed artificially by Prof. W. Rowan of the University of Alberta. Prof. T. Hume Bissonnette of Trinity College, Conn., showed that as the days grow shorter or longer, certain important changes take place in the glands which control the bird's behavior.

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Beneficial results were also obtained in cases of latent syphilis of the central nervous system. "Measurable benefit" was obtained in patients suffering from warts and lichen planus.

A separate report on 15 months of clinical trial of the drug will soon be issued. Meanwhile animal experimentation indicates "that several other members of the series (of compounds) are suitable as therapeutic agents."

Solutions of the new drugs are neutral, unaffected by mild acidity or alkalinity and are stable in all body fluids. This stability allows the compounds to pass through the stomach and remain soluble in the normally alkaline intestinal fluids.

"This property makes possible intestinal absorption in amounts previously impossible," the researchers stated. "It now appears that wider margins of safety, as well as high and more uniform blood levels of bismuth are possible during oral administration as compared to the standard intramuscular route previously employed."

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Sulfa Drugs Used Externally

► MORE EFFECTIVE germ-fighting sulfa drugs for external use seem probable through discovery of new compounds reported by Dr. Paul Goedrich of the New Jersey College of Pharmacy, Rutgers University.

Interacting iodine with a series of the well-known sulfonamides, Dr. Goedrich obtained adsorption compounds which showed germ-killing power against a wide range of germ types. Unlike the regular sulfa drugs, they did not seem to be choosy about the kinds of germs they attacked.

"The most striking feature of these compounds," Dr. Goedrich reported, "is seen in the fact that when the total iodine is removed from the sulfonamide-iodine compounds, they still demonstrate a germ-inhibitive and sometimes germ-killing action, *in vitro* [the test tube], whereas the unchanged, original sulfonamides show no such action at all."

This shows that their unusual action is not due to the iodine alone. After iodine removal, the pharmacists were told, the drugs can still be recognized as sulfas by official test, but that chemical changes have occurred is demonstrated by comparative bacteriological testing.

PHARMACY

New Uses for Bismuth

A new series of bismuth compounds shows promise in treating cases of advanced syphilis. It may also prove helpful for less serious ailments such as warts.

► EFFECTIVE treatment of certain types of syphilis may result from an entirely new series of bismuth compounds which can be taken by mouth instead of the intramuscular injections now ordinarily used. A few less serious ailments, such as warts and a persistent inflammatory skin disease called lichen planus, are also expected to be amenable.

Preparation, properties and clinical trial of the new drugs were reported to the meeting of the American Pharmaceutical Association in Columbus,

Ohio, by Dr. Larry M. Wheeler, Dr. R. A. Kuever, Dr. E. G. Gross and Dr. R. Nomland of the State University of Iowa.

"Preliminary clinical studies in the Department of Dermatology and Syphilology revealed encouraging results following oral administration of dihydroxypropyl bismuthate to syphilitic patients," the researchers reported. Only advanced cases in the second and third stages were available for experimental treatment.

The new sulfa-iodine compounds showed definite germ-killing action against tough spore forms of germs such as those which cause tetanus, gas gangrene and anthrax. Similar results were obtained with vegetable forms, such as the ball-shaped staphylococci and the rod-shaped typhoid bacillus of the gram-negative type.

These experiments do not imply a cure-all for such infections, but serve to make Dr. Goedrich's point that the compounds "seem therefore to be non-selective in their bactericidal action."

Since such drugs should "retain a germ-killing action in the presence of organic matter, as present in wounds," tests were conducted under similar conditions.

Difficulties of using the regular sulfa drugs in wounds and various local applications have been pointed out by other investigators and their use questioned unless the physician knows with what combination or strain of germs he is dealing.

"Highly trained bacteriologists and well equipped laboratories are of paramount necessity to establish which type of organism is involved and which kind of the many sulfa drugs would be best suited for treatment," Dr. Goedrich stated. "Such facilities are rarely readily available to the average physician in an emergency, and hardly so at far-off outposts of our armed forces. It appears therefore that indiscriminate use of sulfonamides would mean taking a chance of 'hit or miss'."

Hence the need for a sulfa drug for local application, such as the promising new compounds which would be effective against all types of bacteria, including the resistant spore-bearers. Research is continuing.

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PHARMACY

Many Pharmacies of Future Will Be in Clinics

FEWER drug stores as we know them today, more medical supplies dispensed through prescription shops and pharmacies in medical centers and group clinics, and better care for low wage groups were possible post-war changes foreseen in a report to the American Pharmaceutical Association in Columbus, Ohio, by Dr. Robert P. Fischelis, chairman of the Social and Economic Relations Committee.

The medical center idea, developing in many war production communities,

is probably here to stay, the committee believes, and will have its effect upon private practice in both pharmacy and medicine. More pharmaceutical service through such agencies is considered likely either with government sponsorship or without it. Some plan to provide more adequate medical care and supplies for people with low incomes is certain, the report predicted. Fewer pharmacists may be available for corner drug stores as need for pharmacists increases for group service and in hospitals.

"The corner drug store will probably be confined more and more to towns which can support only one pharmacist and to neighborhood communities," Dr. Fischelis said. "This will open the way for more pharmacists to earn their living out of strictly professional practice.

GENERAL SCIENCE

Reason Not Sufficient

Sentiments and different backgrounds due to language and different experiences are important factors in post-war world and peace, Harvard anthropologist states.

ANY APPROACH to world peace that is purely geographic or economic is doomed to breed new confusion, Prof. Clyde Kluckhohn, Harvard University anthropologist, warned the Fourth Conference on Science, Philosophy and Religion meeting in New York.

Anthropologists agree, he said, that geographical position, natural resources, present degree of industrialization, illiteracy rate and countless other factors are important, but that many other factors must be taken into account.

The American public views the problems of the post-war world too exclusively in the light of reason, Prof. Kluckhohn said. Faith in reason is a glorious American tradition, but we must not ludicrously overestimate how much reason can accomplish in a limited time. Many of our acts are determined by sentiment and not reason. The sentiments of various peoples are determined by their peculiar historical experience.

The fact that various peoples have different languages causes them to arrive at different conclusions and actions when they start with the same set of conditions and facts.

"What we notice, what we talk about, what we feel as important is in some part a function of our linguistic habits," he said. "Because these linguistic habits tend to remain as unquestioned 'back-

"The pooling of patents now going on is resulting in a more liberal distribution of the right to produce important drugs, such as the sulfonamides, and may help to change the emphasis from brand names to the basic drugs themselves."

Need was foreseen for still more efficient cooperation between the pharmacist and physician to maintain top-notch medical service, since there are likely to be fewer physicians after the war. The more than 45,000 physicians in military service will not all return at once and as many as a third are expected to remain in the Army, Navy or U. S. Public Health Service. Many will serve in foreign lands to rehabilitate peoples who have war ills of mind and body.

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ground phenomena,' each people tends to take its fundamental categories, its unstated basic premises for granted. It is assumed that others will 'think the same way,' for 'it's only human nature.' When others face the same body of data but come to different conclusions, it is seldom thought that they might be proceeding from different premises. Rather, it is inferred that they are 'stupid' or 'illogical' or 'obstinate'."

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GENERAL SCIENCE

Young Scientists Work

New year of learning-doing and scientific activity directed toward winning the war starts with school year for Science Club members.

► **SIXTY** thousand young scientists have gone back to work.

They are the members of Science Clubs of America beginning their new season of club activity now that schools have re-opened all over the country. Ranging from ten years through college age these 60,000 hard-working scientists-in-training are starting a new year of concentrated activity that will teach them science, serve as a valuable contribution to the winning of the war, and prepare them for major contribution to the reconstruction of the world when peace comes.

The membership in Science Clubs of America has increased 300% since this time last year. More than 2,500 clubs in all 48 states and also a few in Alaska, Canada, Canal Zone, Cuba, Hawaii, Portugal, Puerto Rico and Central and South America are now affiliated with Science Clubs of America.

The Third Annual Science Talent Search, sponsored by Science Clubs of America, and offering \$11,000 in Westinghouse Science Scholarships is now

under way. Entries must be completed by December 27. Over 15,000 high school seniors competed in a similar contest last year, and it is expected that more than that number will enter this third search for talented science students worthy of financial assistance for higher education.

In public, private and parochial schools, in colleges, in universities, in private homes, in Scout troops, in hospitals for cripples, in every kind of institution where young people can gather for work and study, there are Science Clubs putting in long hours learning about chemistry, physics, aeronautics, radio, bacteriology, horticulture, meteorology and dozens of other sciences. They work in school laboratories after school hours, in basement and attic workshops they devise for themselves, in abandoned stores, in old shops, anywhere they can find the space and equipment to give them a chance to carry on their study and experimenting.

The communities where these Science Clubs of America groups are organized

are becoming accustomed to seeing these eager boys and girls as they go about learning science by doing.

It is not enough for them to study about metals. They prefer to put on huge scrap drives and familiarize themselves with the many metals they have gathered when they sort the salvage, before turning it over to the authorities. They study biology from books, but they also plant Victory Gardens and learn to plant and prune and spray and cultivate. When the harvest is ready they learn the latest methods of canning, drying, salting and preserving. In these and many other ways they learn and at the same time show their neighborhoods new developments in science, for the keynote of the activities of Science Clubs of America is to learn science and learn, too, to apply it to useful purposes.

Already young scientists who have "graduated" from science clubs are proving how effective this training has been to them. In the armed services they become technicians with valuable basic essentials already learned; in war industries they are taking their places rapidly in responsible war jobs; and those fortunate enough to go on to college, university or technical school are in training for the research jobs that will keep this country in the forefront of science.

Major factor in the growing success of Science Clubs of America is the large number of adults who are willing to help youngsters get started in science club work. Often they are science teachers in schools, colleges, universities and technical schools. They are also parents, business men, professional scientists, Scout leaders, and so on, who are willing to give some of their time to encourage and direct the enormous energies and talents of the promising science-minded youngsters of the community. The satisfaction they receive from seeing the development of these talents and the

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successful accomplishments of the club members is reward beyond price for these adults.

To make the responsibilities of these adults (who are referred to as science club sponsors) easier, Science Clubs of America sends booklets, folders and materials of helps, aids and suggestions regularly to each club. There is no charge for this aid from headquarters. It not only makes direction of the club an easier matter for the sponsor but keeps each club acquainted with the activities of all clubs so that they can learn from one another in the true spirit of science.

There is no limit to the number of science clubs that can be formed in any locality. In areas where many are in existence they have exchange meetings and science congresses and conferences to demonstrate their experiments to one another and thus speed up their learning. Newspapers, industries, museums of science, colleges, etc., foster large numbers of science clubs and by helping these youngsters to achieve their goals are themselves making a major contribution to American science.

In many states where there are academies of science and similar groups, these bodies of professional scientists have taken over the responsibility of providing inspiration and assistance to the most promising of the science club members. This provides the youngsters help when they need it most and will in time profit those states by increasing the number of well-trained and competent scientists.

There is no charge for affiliation with Science Clubs of America. The administration of the organization is a contribution to science by Science Service.

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NAVAL SCIENCE

Landing Ship Opens Jaws To Let Out Fighting Men

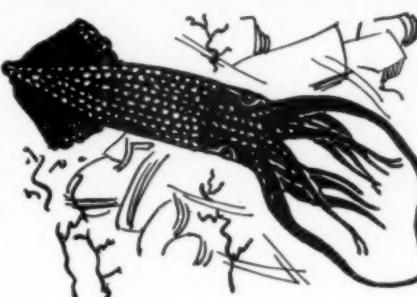
See Front Cover

► THE NAVY calls them "one of the most startling types of ship the war has produced," although they are known officially as LST, Landing Ship—Tank.

They have been built in shipyards located on inland rivers and at Great Lakes ports. Now they are operating in the Atlantic, the Pacific and the Mediterranean. Some of the way stations have been Attu, Rendova, Sicily, Kiska, Munda and New Guinea.

The picture on the cover of this week's SCIENCE NEWS LETTER is an official U. S. Navy photograph.

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Natural Inventions

► MAN'S invincible egotism is reflected in the names he gives to natural objects and structures which his own mechanical inventions chance to resemble. If someone mentions a pitcher-plant, or a hammerhead shark, or a shoebill stork, we all conjure up a vision of the fantastic creature at once, and think how aptly it was named—disregarding the fact that these things existed long before any human being had contrived a pitcher, or a hammer, or a shoe, or any other artifact; long before human beings were on the scene at all.

Fish and other sea creatures seem to have been especial victims of this tendency of man to play the part of a god and make things, not in his own image, but in the image of his handiwork. Thus we have such names as sawfish, swordfish, pipefish, filefish, ribbonfish, threadfish, swordtail, sailfish, gafftops'l catfish, and a hundred others. Sometimes they are named not for their actual appearance but for the fancied resemblance of their activities to our own, as in the fiddler crab, angler-fish, archer-fish, drumfish. One such naming seems to be justified: inkfish. Men use the dark fluid secreted by this squid (which is not a real fish) for ink; its brown tint is known in the water-colorist's box by the mollusk's zoological name: *Sepia*.

Fish are not the only examples of this tendency to name natural things for artificial objects or activities. Plants, especially wildflowers, come in for a lot of it. Consider: bottle tree, barrel cactus, organ-pipe cactus, Indian paintbrush, Indian pipe, lady's slipper, Venus' flytrap, Venus' mirror, Solomon's seal, Dutchman's breeches, trumpet-flower, pincushion flower, Spanish bayonet, silversword, swordgrass, sawgrass, chain

fern, shield fern, sword fern, cannonball tree, bellflower, screw palm, sword bean, knife bean, inkberry, telegraph plant.

Sometimes a shape will reflect itself in half-a-dozen names. There's a whole set of cups, for example: buttercup, creamcup, cupweed, leathercup, deathcup mushroom. Or a particular texture will sponsor several plants: silk-oak: satinwood, velvet-leaf.

In a few cases, the process has been reversed, and man acknowledges his debt. Such names may recognize merely chance or fanciful resemblances, such as a carpenter's horse or catheads on a ship or firedogs on the hearth or worm-gears in machinery. Or they may show a definite tendency for man to study the works of nature and profit thereby, as in gull-winged airplanes and beaver-tailed boats and caterpillar tractors. But such conscious honesty on our part is still rare.

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GENERAL SCIENCE

Field Museum of Chicago Has Fiftieth Anniversary

► THE RAPIDLY growing youngster among the world's leading museums, the Field Museum of Natural History in Chicago celebrated its fiftieth birthday on September 16.

"It is probable," says Orr Goodson, acting director, "that founder Marshall Field and those other civic-minded men associated with the museum's birth never quite hoped that the museum could in such a short space of time achieve the outstanding position it holds today—one of the four leading natural history museums of the world."

Among the older museums are the 190 - year - old British Museum, the Smithsonian Institution and the American Museum of Natural History.

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MATHEMATICS DICTIONARY

Invaluable in reading any book that uses mathematics.

THE JAMES MATHEMATICS DICTIONARY,

the only such book now published, provides standard definitions of the terms and phrases from arithmetic through elementary differential equations; the technical terms ordinarily used in the applications of these subjects, and more advanced basic terms. Easy examples, many illustrations and all sorts of formulas are included. The appendix contains tables of weights and measures, a list of mathematical symbols and the tables ordinarily used in handbooks.

This dictionary is a great deal more than a collection of definitions. It explains, illustrates and correlates, stressing especially those operations that are hardest to understand. One reader has called it "Ten texts in one."

Available in flexible or non-flexible binding, for \$3.00, from the Digest Press, Dept. 3-B, Van Nuys, California, or Science News Letter.

•New Machines and Gadgets•

• IDENTIFYING the 55 navigation stars is simplified by a star finder which is especially useful as a training instrument. A central cylinder is adjusted so that it is parallel with the earth's axis. Settings are then made for local time, date and the star position which is printed on the instrument's cylinder. The sighting tube will then point to the chosen star with less than a degree error.

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• VAST UNDERGROUND storage tanks to hold millions of gallons of aviation gasoline and other petroleum fuels are being built at coastal points and naval outposts. They are made of bomb-proof concrete, and lined with synthetic rubber sheets to prevent leakage and chemical action between the gasoline and the concrete.

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• MOBILE HOUSING units, each providing 250 square feet of floor space, fold into packages 16½ feet long, 8 feet wide and 26 inches thick. They use an accordion-opening technique and may be erected in a few minutes.

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• TINY GLASS JEWELS used in electrical and other instruments are quickly counted by using a tray with 1,000 holes the size of a pinhead in the bottom. Jewels are rocked back and forth in the



tray until each hole contains one, as shown in the photograph. A slide below the bottom is pulled and the jewels drop through.

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• FILTER CLOTHS made of vinyl resin yarn are acid and alkali-resistant, it is claimed. This plastic fabric can be safely used in chemical, pharmaceutical and dyestuff laboratories and manufacturing industries, the manufacturer states.

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• CORRUGATED LEATHER shoe soles may become common after the war. A sole with ridges and furrows running crosswise provides non-skid qualities and is claimed to be extremely flexible.

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• A PORTABLE ODORMETER just patented evaluates odors, particularly objectionable odors near factories. By its use polluted air is compared with pure air from an attached tank to accurately indicate effectiveness of corrective measures.

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• SPECIAL spare-lamp boxes made of a light plastic contain all the various light bulbs needed on a warplane. An inner panel has holes into which the bulbs fit. Sponge rubber is used to protect them.

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If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N. St., N. W., Washington 6, D. C., and ask for Gadget Bulletin 178.

• Just Off the Press •

AUTOMOTIVE MECHANICS: Training for Victory—Clarence G. Barger—American Book, illus., 342 p., \$1.60. This is a combination of the author's *Automotive Mechanics I* and *Automotive Mechanics II*.

AUTOMOTIVE MECHANICS—II: Training for Victory—Clarence G. Barger—American Book, illus., 336 p., \$1.24.

BASIC ENGLISH AND ITS USES—I. A. Richards—Norton, 143 p., \$2.

CELLULOSE AND CELLULOSE DERIVATIVES—Emil Ott, ed.—Interscience, illus., 1176 p., \$15. A technical reference book.

FUNDAMENTALS OF SHOPWORK: A Pre-Induction Course at the Foundational Level—D. J. Swartz, M. J. Gunerman, A. Lafon—Holt, illus., 474 p., \$1.60.

HEAT AND THERMODYNAMICS—Mark W. Zemansky—McGraw-Hill, illus., 390 p., \$4, 2nd ed. An intermediate text-book for students of physics, chemistry and engineering.

HYPER AND ULTRAHIGH FREQUENCY ENGINEERING—Robert I. Sarbacher and William A. Edson—Wiley, 644 p., illus., \$5.50. Includes the generation, transmission and reception of quasi-optical waves. This book is intended for senior students of electrical engineering or persons with equivalent training.

AN INTRODUCTION TO WEATHER AND CLIMATE—Glenn T. Trewartha—McGraw-Hill 545 p., illus., \$4, 2nd ed.

KNOW YOUR HAY FEVER: with chapters on Clinical Applications by A. B. Berresford—A. P. Sperling—Frederick Fell, illus., 241 p., \$2.

NATURALIST AT LARGE—Thomas Barbour—Little, Brown, 314 p., illus., \$3.50.

RADIO: Training for Victory—R. E. Williams, C. A. Scarlett—American Book, illus., 282 p., \$1.48. This is a combination volume of the authors' *Radio I* and *Radio II*.

RADIO—II: Training for Victory—R. E. Williams, C. A. Scarlett—American Book, illus., 276 p., \$1.24. A pre-induction training text.

TEXTBOOK OF QUANTITATIVE INORGANIC ANALYSIS—I. M. Kolthoff, E. B. Sandell—Macmillan, illus., 794 p., \$4.50, rev. ed.

TUNGSTEN: Its History, Geology, Ore-Dressing, Metallurgy, Chemistry, Analysis, Applications, and Economics—K. C. Li and Chung Yu Wang—Reinhold, 325 p., illus., \$7.

WEATHER AROUND THE WORLD—Ivan Ray Tannehill—Princeton Univ., 200 p., illus., \$2.50.

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